

USSR

UDC 539.389.3

DRUZHININ, V. V., DURNEV, V. D., and KURENNYKH, L. K., Verkh-Isetsk Metallurgical Plant, Sverdlovsk, and Scientific Research Institute LEO "Elektrosila," Leningrad

"Aging Electrical Steel in a Magnetic Field"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 30, No 6, Dec 70, pp 1324-1325

Abstract: In the operation of magnetic systems of electrical machines, electrical steel is subjected not only to the action of increased temperature but also to the action of a magnetic field. For this reason it was deemed advantageous to study the aging of electrical steel in a magnetic field inasmuch as there are no data about this question in the literature.

A low-alloy hot-rolled steel was chosen for experimentation with samples made from strip cut to size 0.5 x 250 mm with a total weight of 1 kg. Specific losses were measured by the absolute wattmeter method in a small Epshteyn unit. Aging samples in the presence of a magnetic field was done by two methods:

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1. A special Epshteyn unit was made with thermally insulated magnetic and measuring coils. After determining the initial specific losses P_0 a sample was placed in the thermostat, a part of the Epshteyn unit, and an alternating current was sent to the magnetic coil. After maintaining the Epshteyn unit at 120°C for 120 hours the sample was taken from the thermostat and specific loss measured at room temperature P_1 . The aging coefficient was determined by the formula: $(P_1 - P_0)100\%/P_0$. A second batch of identical samples also were aged in the unit but without switching on the magnetizing current.

2. A sample was placed in a solenoid which was then placed in the thermostat. Magnetization of the sample was conducted in an open magnetic circuit. The external magnetic field was constant (1000 and 3000 a/m) and variable (3000 a/m) at a frequency of 50 Hz. Specific loss was determined in the same manner as described above.

For samples aged by method 1, those having a $P_0 = 2.80 - 3.00$ w/kg were then aged by the second method. From the data obtained it was found that both

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constant and variable magnetic fields increase aging of electrical steel. The variable magnetic field increased aging by a two-three-fold magnitude increase in the aging coefficient. The effect of the constant field was much weaker but did occur. The effect of the magnetic field on the aging process may be caused by several reasons. In a constant field one of the causes may be the residual magnetization of magnetic particles. Here the greater loss was associated with the effect of free strips around inclusions which have an effect on the magnetic structure of the matrix. Under the action of a variable magnetic field the process of aging, in all probability, is significantly activated by periodic magnetostrictive strains of the crystal lattice. An increase in the aging coefficient in a magnetic field was also associated with interaction of the external field with the magnetic field of dislocations which accompany their movements. Dislocations moving under the action of the field are stopped near barriers and the concentration of impurity atoms is increased.

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1/2 021 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--STRESSES IN THE OUTER PARTS OF A THIN METAL STRIP IN ROLLING -U-
AUTHOR-(02)-SMIRNOV, V.S., DURNEV, V.D.
COUNTRY OF INFO--USSR
SOURCE--IZVEST. AKAD. NAUK SSSR, METALLY, MAR.-APR. 1970, (2), 166-170.
DATE PUBLISHED-----70
SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR, MATERIALS
TOPIC TAGS--METAL ROLLING, IRON ALLOY, SILICON ALLOY, PLASTIC DEFORMATION,
STRESS, METAL STRIP
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3003/1441 STEP NO--UR/0370/70/000/002/0166/0170
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PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0130374

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE STRESS DISTRIBUTION IN A METAL STRIP DURING THE ACTUAL PROCESS OF ROLLING IS DISCUSSED THEORETICALLY WITH SPECIAL REF. TO THE STRESSES IN THE OUTER PARTS OF THE STRIP. AN ANALYTICAL RELATIONSHIP WAS DERIVED FOR DETERMINING THE COMPONENTS OF THE STRESS TENSOR IN THE REGION ADJACENT TO THE CENTRE OF DEFORMATION. DURING ROLLING, PLASTIC DEFORMATION STARTS BEFORE THE METAL ACTUALLY ENTERS THE ROLL GAP. THIS IS ILLUSTRATED BY REF. TO AN FE,SI ALLOY IN WHICH THE DISLOCATION DENSITY IN THE ZONE IMMEDIATELY PRECEDING THE CENTRE OF DEFORMATION RISES BY A FACTOR OF 10-50.

UNCLASSIFIED

1/2 007
UNCLASSIFIED
PROCESSING DATE--30OCT70
TITLE--A POSSIBILITY OF COMBINED UTILIZATION OF ATP AND THIAMINE WITH
ADRENALIN AND NCRAADRENALIN IN DOGS AFTER MASSIVE BLOOD LETTING -U-
AUTHOR--DURNEV, V.I.
COUNTRY OF INFO--USSR
SOURCE--PATOLOGICHESKAYA FIZIOLOGIYA I EKSPERIMENTAL'NAYA TERAPIYA, 1970,
VOL 14, NR 3, PP 68-69
DATE PUBLISHED--70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--HEMORRHAGE, ADENOSINE TRIPHOSPHATE, THIAMINE, INTRAVENOUS
PERFUSION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3001/1926
STEP NO--UR/0396/70/014/003/0068/0069
CIRC ACCESSION NO--AP0127327
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PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0127327

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXPERIMENTS WERE PERFORMED ON DOGS IN WHICH MASSIVE BLOOD LETTING WAS PERFORMED (40 TO 45 ML PER KG OF BODY WEIGHT). A MIXTURE OF ATP AND THIAMINE GIVEN IN CONTINUOUS INTRAVENOUS INJECTION (2.5 MG-KG IN GLUCOSE SALT SOLUTION) PROVED TO BE EFFECTIVE. ADDITION OF ADRENALIN (10 GAMMA-KG) OR OF NORADRENALIN BITARTRATE (20 GAMMA-KG) TO THE ATP AND THIAMINE MIXTURE LED TO THE FALL OF THE EFFICACY OF THIS MIXTURE. FACILITY: KAFEDRA FARMAKOLOGII LUGANSKOGO MEDITSINSKOGO INSTITUTA.

UNCLASSIFIED

DURNOVA, G. N.

Physiology

SO: JPRS 54539

AS NOV 71

UDC: 612.017.1-06:612.766.2

THE CONDITION OF IMMUNOCOMPETENT ORGANS IN THE PRESENCE OF HYPOKINESIA

Article by V.V. Poturajlov, A.S. Kaplunok

Physiology

G.N. Durnova, Moscow, Vestnik

Academy of Medical Sciences USSR, Bulletin, No 10, 1971, pp 29-36

6524226

The deleterious effect of restricted movement on the human organism is well known to clinicians who deal with patients who have been on a strict bed rest regimen for a long time. At the present time, the problem of hypokinesia is drawing the increasing attention of wide circles of medical biologists, since mechanization and automation of man's industrial activities, as well as the development of transportation have resulted in a marked decrease on the physical loads man has to experience in his routine activities, this causes deconditioning of the muscle and cardiovascular systems.

Man is faced with particularly severe inactivity during space flights, when reduced mobility because of the limited size of the spacecraft is combined with weightlessness which completely rules out a static load on the muscled. Among the numerous aspects of the problem of hypokinesia, those dealing with the effect of restricted movement on the organism's immunobiological reactivity have not yet been completely resolved. Clinical studies on healthy individuals maintained on strict bed rest for a long time revealed that hypokinesia is associated with inhibition of natural immunity which results in development of nonspecific inflammatory diseases (M.I. Kozar', G.P. Mikhaylovsky et al.; P.A. Sorokin et al.; B.A. Chukhlovin and S.A. Burlov). It has been shown in animal experiments (V.G. Galaktionov and A.S. Ushakov) that the antibody genesis process is impeded in the presence of hypokinesia.

The extremely limited number of works dealing with immunobiological reactivity of the organism as related to hypokinesia, as well as the lack of data with respect to changes observed in immunocompetent (lymphoid) organs with hypokinesia prompted us to conduct this investigation.

Material and methods. The experiments were conducted on albino male rats with an initial weight of 180 grams who were placed in special individual cages where the animals' movements were markedly restricted. For the duration of the experiment, the control group of animals was kept in ordinary cages. The experimental and control animals received the same quantity of standard food pellets and water ad libitum. The rate in the control and experimental

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KAPLANSKIY, A. S., and IURNOVA, G. N.

"The Effect of Partial Adaptation to Hypoxia on Immunobiological Reactivity"

Moscow, Byulleten' Eksperimental'noy Biologii i Meditsiny, No 4, 1971,
pp 68-70

Translation: Neutrophil phagocytosis decreases slightly in mice in the course of partial adaptation to hypoxia. There is also a decrease in antibody formation and in the number of antibody-containing cells in the lymph nodes along with hypoplasia of the latter. These shifts are less pronounced than during continuous adaptation to hypoxia.

Since partial adaptation to hypoxia is an effective means of increasing the resistance of animals and of man to a number of extreme factors, including hypoxia (2), we studied in this work the immunological reactivity of the body under conditions of partial conditioning to hypoxia and after such training. The literature on the subject is sparse and contradictory (3, 9, 10).

Procedure

Experiments were performed on 150 male mice weighing about 20 g and divided into 2 equal groups - experimental and control. The experimental

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KAPLANSKIY, A. S., and DURNOVA, G. N., Byulleten' Eksperimental'noy Biologii i Meditsiny, No 4, 1971, pp 68-70

animals were placed 6 hours a day for one month in a ventilated pressure chamber (405 mm Hg - altitude of 5,000 m). The control group remained in an atmosphere with normal oxygen content. Immunological activity was studied in the course of partial adaptation to hypoxia by mice injected subcutaneously in the inguinal region with 40 µg of typhoid Vi antigen on the 20th day of the experiment. The mice were sacrificed on days 24, 26, and 29 of the experiment (seven experimental and seven control each time). Immunological activity after the end of partial adaptation to hypoxia was studied in mice immunized twice subcutaneously in the inguinal region with alcohol typhoid vaccine (400 million microbial cells) or with bovine serum albumin (BSA) in a dose of 200 µg. The first injection of antigens was given on day 7, the second, 7 days after the end of partial adaptation to hypoxia. The mice immunized with typhoid vaccine were sacrificed on days 4, 7, and 10 (10 experimental and 10 control each time) after the second immunization. The body weight, weight of the regional lymph nodes (inguinal), phagocytic activity of neutrophils (1), abdominal macrophages (12), and titers of Vi or O antibodies (passive hemagglutination method) were determined in the mice that received Vi antigen or typhoid vaccine. The inguinal lymph nodes

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were fixed in Carnoy's fluid and embedded in paraffin. Serial sections were stained with hematoxylin-eosin and methyl greenpyronine (control with nuclease). The content of immunocompetent cells was studied by the indirect fluorescent antibody method (11) in the lymph nodes of mice immunized with PSA. The data obtained in the experiment were statistically analyzed.

Results

The condition of the mice remained good throughout the experiment. There was no loss of weight compared with controls and none of the experimental animals died.

No significant shifts were noted in phagocytosis by neutrophils and macrophages during and after partial adaptation to hypoxia. Only the mice sacrificed on days 24 and 29 exhibited a tendency of phagocytic activity to diminish. Although the number of phagocytizing cells decreased, their absorptive capacity remained unchanged.

The formation of V1 antibodies in experimental mice sacrificed on days 24, 26, and 29 decreased compared with controls. The decrease took place against a background of hypoplasia of the regional lymph nodes. A drop in weight of the lymph nodes was observed in experimental mice both during and after partial adaptation to hypoxia. Although there was a statistically significant difference only on day 24 of the experiment and on day 17 after

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it was over, the weight of the lymph nodes in the experimental mice clearly tended to decrease. The hypoplasia of the lymph nodes, as shown by the results of immunomorphological analysis, was caused by reduction in the number of plasmocytes in the medulla of the nodes and especially by reduction in the number of lymph cells in the cortex of the nodes, as manifested by an attenuation of the cortex, shrinkage of the follicles and their light centers, and reduction in number of sinuses in lymph nodes of experimental mice was also less pronounced than in the control.

Despite the persistent hypoplasia of the lymph nodes, titers of O antibodies in experimental mice on days 11, 14, and 17 after the end of partial adaptation to hypoxia were the same as in the control.

Immunofluorescent analysis of the lymph nodes of mice immunized with BSA revealed the presence of antibodies in mature and immature plasma cells which were frequently arranged in groups of 5 to 20 in the medulla of the lymph nodes. The number of cells shown to contain antibodies by the fluorescent antibody method was small compared with the total number of plasma cells. The number of immunocompetent cells in the lymph nodes was somewhat smaller in five of seven experimental mice sacrificed 5 days after the second immuniza-

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KAPLANSKIY, A. S., and DURNOVA, G. N., Byulleten' Eksperimental'noy Biologii i Meditsiny, No 4, 1971, pp 68-70

tion than in the control, as manifested chiefly by the reduction in number of focal accumulations of these cells in the medulla of the lymph nodes and by a reduction in their number in individual accumulations. No differences were found between control and experimental mice sacrificed on days 9 and 14 after the second injection of BSA with respect to the number of immunocompetent cells in the lymph nodes.

Thus, the above data show that partial adaptation to hypoxia produces shifts in mice, including the immunocompetent organs, that are similar to, if less pronounced than, the shifts that occur during continuous adaptation to hypoxia (4, 5, 6). These shifts indicate depression of immunobiological reactivity. Some of them (hypoplasia of the lymph nodes) persist for about 2 weeks after the end of partial adaptation to hypoxia.

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DURNOVA, G. N., KAPLANSKIY, A. S., and PORTUGALOV, V. V., Moscow

"Cytochemical and Immunological Investigation of the Reactivity of Mice Kept in an Atmosphere With a High Oxygen Content"

Moscow, Arkhiv Patologii, Vol 32, No 10, 1970, pp 49-53

Abstract: Exposure of male mice for 10 days to an atmosphere containing 69% oxygen resulted in inhibition of both phagocytosis by neutrophils and phosphorylase activity in neutrophils. Exposure also increased their glycogen content. The high oxygen level had no effect on phagocytosis by macrophages, antibody production, or resistance to infection with a live *S. typhi* culture after immunization with Vi-antigen. The toxic effects of the oxygen were manifested by insignificant lesions in the lungs, liver, thymus, and lymph nodes. There were no visible changes in the heart, kidneys, adrenals, or testes.

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DUROV, V. I.

JPRS-53880

23 August 1971

UDC 616.988-002.151-036.2(470.61)
EPIDEMIOLOGY OF CRIMEAN HEMORRHAGIC FEVER. REPORT 1. EPIDEMIOLOGICAL CHARACTERISTICS OF CRIMEAN HEMORRHAGIC FEVER IN ROSTOVSKAYA OBLAST

[Article by V.D. Perel'atov, K.K. Vostokova, V.N. Yasodinskii, and V.I. Durov, Rostov Scientific Research Institute of Medicine, Rostovskaya Oblast, RSFSR Ministry of Public Health; Moscow, Russian. No. 3, 1971, pp 324-327.]

A number of works have already treated the epidemiological problems of Crimean hemorrhagic fever (CHF) in Rostovskaya Oblast (Perel'atov, 1964, 1965; Perel'atov et al, 1966; Hirulya et al, 1966, and others).

The materials at our disposal and our own observations over the period 1963-1969 provide a possibility for dynamically describing the natural focus of CHF in Rostovskaya Oblast, pin-pointing population groups in a potentially dangerous position with regard to CHF infection, justifying a number of nonspecific prophylactic measures, and defining the immediate tasks.

For the oblast as a whole the total number of CHF infections did not exceed 61 cases per year from 1963 through 1969, with the exception of 1968 when 131 victims of CHF were recorded. Even though the infections were of a sporadic nature, the number of CHF patients as well as the number of population centers undesirable with respect to CHF and of infected rayons increased through 1969 (Figure 1).

A tendency of "expansion" of the borders of the focus has been noted toward the northwest and southeast. Cases of CHF infection were recorded in 1968 and 1969 in Millerovskiy, Tarasovskiy, Kirovskiy, and Timiryazevskiy rayons, where there were none before 1965. Even though there were changes in the

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AVTSYN, A. P., BEREZINA, Ye. K., KENIG, E. E., ~~DURSUNOVA, S. M.~~ BELOVA, Ye. M.,
SHTEGEL'MAN, and ZHUKOV, V. G., Scientific Research Institute of Human Mor-
phology, Academy of Medical Sciences USSR, and All-Union Scientific Research
Institute of Antibiotics

"An Experimental Model of Leishmanial Meningoencephalitis"

Moscow, Antibiotiki, No 10, 1971, pp 885-888

Abstract: Intercerebral inoculation of mice with *Leishmania donovani*, strain T-1, obtained from dogs, and other strains obtained from reptiles resulted in the typical clinical picture of meningoencephalitis. The reaction to *Leishmania* and to the trauma was evident at the injection site in 14 days and 40 days later there were signs of inflammation of the meninges. The process became generalized in the central nervous system after 160 days. Lymphoid infiltrates appeared in the pia mater and small granulomas in the brain tissue proper. Within the lymphoid infiltrates and granulomas, *Leishmania* were observed. The granulomas consisted mainly of epithelioid cells. Actual penetration of *Leishmania* into nerve cells could not be conclusively demonstrated. The ease with which meningoencephalitis can be induced in mice with *Leishmania* makes these animals suitable for use in experimental chemotherapy.

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UDC 669.018.25(075)

ROMANOVA, N. I., CHEKULAYEV, P. G., DUSEV, V. I., LIVSHITS, T. A., and
KURDOV, K. N.,

"Metal Ceramic Hard Alloys"

Metallokeramicheskiye Tverdyye Splavy (English Version Above), Metallurgiya
Press, 1970, 352 pages

Translation of Annotation: This book presents in brief form the basic principles of the production and application of metal ceramic hard alloys. Information is presented on the initial raw material, and methods are described for producing powders of metals and carbides used in the manufacture of hard alloys.

Methods of grinding the initial materials and methods of preparing the mixtures and pressing them are described. Description are given of processes occurring during sintering of alloys, and methods of treating hard alloy products. Areas of their application in the metal working and mining industries are described. Methods of quality testing of products during preparation of hard alloys are discussed.

The book is designed as a teaching aid for professional and technical schools training workers in the production of metal ceramic hard alloys. 94 figs; 51 tables; 19 biblio. refs. 1/10

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ROMANOVA, N. I., et al., Metallokeramicheskiye Tverdyye Splavy, Metallurgiya Press, 1970, 352 pages

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DUSHAUSKENE-DUZH, N.-R. F., MARCHYULENENE, E. -D. P., NYANISHKENE, V. B.,
SHCHULIYENE, R. I., and POLIKARPOV, G. G.

"The Uptake of Radionuclides by Some Fresh-Water Hydrobionts"

Vil'nyus, Tr. AN LitSSR (Proceedings of the Academy of Sciences Lithuanian SSR), B, No 3 (59), 1972, pp 201-212 (from Referativnyy Zhurnal--Biologicheskaya Khimiya, No 5, 1973, Abstract No 5F1532)

Translation: As a result of investigations conducted under natural conditions in 1967-1968 (10 fresh water ponds in the Lithuanian SSR), it was established that the accumulation coefficients (AC) for ^{90}Sr and ^{210}Pb did not differ in fishes and molluscs, while in the case of plants the AC for ^{210}Pb was an order of magnitude less than that for ^{90}Sr . A definite correlation was found to prevail between the concentrations of ^{90}Sr and ^{210}Pb . The AC for ^{90}Sr and ^{210}Pb were found to depend on the ash content of the hydrobionts. The highest AC for ^{90}Sr , ^{137}Cs , ^{144}Ce , and ^{106}Ru were observed in the case of the phytoplankton and in the silt. Of the various radionuclides, ^{144}Ce had the highest AC in the hydrobionts, and ^{137}Cs in the silt. The AC of ^{90}Sr was relatively low in the hydrobionts and silt. The

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intense accumulation of ^{137}Cs , ^{144}Ce , and ^{106}Ru in the silt from the aquatic environment serves to decrease the uptake of these radionuclides by chironomid larva. The chironomid larva assimilate radionuclides in the following quantities from a radioactive meal: ^{90}Sr -- 10%, ^{137}Cs -- 9%, ^{144}Ce -- 11%, and ^{106}Ru -- 6%. Year old carps assimilate 10% of the total quantity of ^{144}Ce in a radioactive meal (chironomids), which pass through their gastrointestinal tract. The uptake of ^{90}Sr , ^{137}Cs , ^{144}Ce , and ^{106}Ru by zebra mussels and chironomid larvae, of ^{90}Sr into the organisms of pond snails, and of ^{144}Ce by the year old carps occurs primarily from the aqueous environment, and in smaller quantities from the food. It was shown that fishes belonging to different trophic levels (carps and predatory fishes) accumulate ^{90}Sr to the same extent. Analogous findings held for ^{210}Pb . The AC for each of these radionuclides does not depend on the type of nutrition of the fish.

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Polymers and Polymerization

USSR

UDC 54--126+546.56+546.81

DUSHCHENKO, V. P., BARANOVSKIY, V. M., KUZ'MOVICH, V. V., CHEGORYAN, V. M., VYSOTSKAYA, V. N., and IVKINA, N. A., Institute of Colloidal Chemistry and Chemistry of Water, Academy of Science Ukrainian SSR

"Thermophysical Properties of Metallopolymers Derived From Inorganic Heteropolyacids"

Kiev, Ukrainskiy Khimicheskii Zhurnal, Vol 37, No 6, Jun 71, pp 618-620

Abstract: Coefficients of heat- and electroconductivity of copper and tin metallopolymers derived from silicomolybdic and silicotungstic acids were studied as functions of temperature. The acids were reduced by respective metals employing a ratio of 6 electrons per acid molecule. Highly dispersed metals were produced in aqueous solutions of complex blues by electrolytic or chemical methods; the complexes were coagulated on the surface of metal particles, and then the system was treated with barium oxide or glycerine at 200°C. The resulting powdery metallopolymers were compressed into tablets and studied by the method of dynamic heating. It was shown that the inorganic base of these metallopolymers exhibits some crystalline structure. Metal particles appear to be isolated from each other by layers of the inorganic
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DUSHCHENKO, V. P., et al., Ukrainskiy Khimicheskiy Zhurnal, Vol 37, No 6,
Jun 71, pp 618-620

polymer. The relationship between the coefficient of heat conductivity and temperature is analogous to the case of crystalline polymers. An increase in the concentration of metal in metallopolymers results in different increases of the coefficient of heat conductivity, depending on the polymer.

2/2

- 69 -

Acc. Nr.

AP0045162

Abstracting Service:
CHEMICAL ABST.

5-78

Ref. Code

UR0191

91068d Effect of dispersed fillers on the temperature dependence of the specific heat of polystyrene. Tvtvuchenko, V. S.; Dushchenko, V. P.; Solomko, V. P.; Galinskaya, V. I. (USSR). Plast. Massy 1970, (1), 51-2 (Russ). Block polystyrene (I) was filled with a finely divided kaolin (diam. $\sim 1-5 \mu$), 2 fractions of powd. quartz (II) (diam. $< 0.05 \text{ mm}$; $0.1 < \text{diam.} < 0.16 \text{ mm}$), and glass fibers (diam. = 0.003 mm , length = 1.0 mm), and its sp. heat (C_p) as a function of temp. was detd. thermal anal. at $20-140^\circ$. The C_p of the filled I increased with temp.; the rate of increase in the glass state region was $7 \times 10^{-4} \text{ cal/g-degree}$. Increased filler content brought about a decline in C_p , which was most pronounced in I-II compns. (when diam. $< 0.05 \text{ mm}$), presumably due to the lower heat capacity of the filler and a reaction with the binder. CKJR

REEL/FRAME

19780062

7

Acc. Nr: **AP0049944**

Abstracting Service:
CHEMICAL ABST. 5-7c

Ref. Code:

4R 0314

101317a Liquid-holding properties of some substances dried from organic liquids and water. Kaminskii, L. P.; Bel'dij, V. V.; Dushchenko, V. P.; Sazhin, B. S.; Panchenko, M. S. (USSR). *Khim. Neft. Mashinostr.* 1970, (1), 6-8 (Russ). The heat of vaporization of MeOH, Me₂CO, CCl₄, and H₂O from kaolin, loam, potato starch (I), polycarbonate, poly(vinyl chloride), and chloridic anhydride was detd. from thermal anal. heating curves of isothermal drying and sorption and adsorption isotherms. All of the materials cited had considerable amts. of adsorbed liqs. The amts. of liqs. retained by the polymers were detd. The sp. heat of vaporization was inversely proportional to temp. Increased temp. had different effects on the polymers, depending on their phys. structure; for instance, in I there was a significant swelling which increased its surface area and the amt. of the liq. retained.

CKJR

26.

REEL/FAME

19801880

1/2 011 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--NUCLEON MESON MODEL OF BARYONS WITH THE MASS SMALLER THAN 2 GEV -U-
AUTHOR--DUSHEKO, V.F.
COUNTRY OF INFO--USSR
SOURCE--(JIAR-PS-4987), 1970. 11P. DEP. CFSTI
DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--SPECTRUM, BARYON, NUCLEON, MESON, NUCLEAR SHELL MODEL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3001/1551 STEP NO--UR/0000/70/000/000/0001/0011

CIRC ACCESSION NO--AT0127047
UNCLASSIFIED

2/2 011

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AT0127047

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SOME EMPIRICAL REGULARITIES IN THE SPECTRUM OF BARYONS OF SMALL MASSES, WHICH ARE REVEALED WHEN SUCH BARYONS ARE CONSIDERED TO BE THE COMPOUNDS OF A NUCLEON MESON SYSTEM, ARE DISCUSSED. THE CHARACTER OF THESE REGULARITIES PROVES THE POSSIBILITY OF EXISTENCE OF A MODEL OF THE SHELLTYPE. THE SYSTEMS WITH MESONS π , K , η STABLE WITH RESPECT TO THE STRONG DECAYS ARE CONSIDERED. FACILITY: JOINT INST. FOR NUCLEAR RESEARCH, DUBNA, USSR, LAB. OF NUCLEAR PROBLEMS.

1/2 021 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--ISOLATION OF POLY,STYRENESULFONIC ACID, FROM A REACTION MIXTURE -U-

AUTHOR--(05)-ALEKSANDROV, I.V., YEVDOKIMOVSKOPINSKIY, A.N., PETROVA, N.A.,
DUSHEYKO, D.A., ZAYTSEVA, V.N.
COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 265,439
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--09MAR70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--POLYMER, STYRENE, SULFONIC ACID, CHEMICAL SEPARATION, CHEMICAL
PATENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3007/1763

STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0137003

UNCLASSIFIED

2/2 021

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AA0137003

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. POLY(STYRENESULFONIC ACID) IS
SEPD. FROM A REACTION MIXT. IN THE FORM OF ITS SALT. THE MIXT. IS
TREATED WITH AMMONIA AND THEN ACETONE UNTIL IMMISCIBLE LAYERS ARE
OBTAINED.

UNCLASSIFIED

/2 013 UNCLASSIFIED PROCESSING DATE--1806170
TITLE--PRODUCTION OF XI PRIME NEGATIVE HYPERONS IN PI PRIME NEGATIVE P
INTERACTIONS AT 5.1 GEV-C -U-
AUTHOR--(05)-BUDAGOV, YU.A., VINOGRADOV, V.B., VOLODKO, A.G., DZHELEPOV,
V.P., DUSHENKO, V.F.
COUNTRY OF INFO--USSR

SOURCE--PIS'MA ZH. EKSP. TEOR. FIZ. 1970, 11(1), 28-31

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS, NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--HYPERON, PION PROTON INTERACTION, RADIOACTIVE DECAY, PARTICLE
PRODUCTION, PARTICLE CROSS SECTION, BUBBLE CHAMBER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1988/0678

STEP NO--UR/0386/70/011/001/0023/0031

IRC ACCESSION NO--AP0105654

UNCLASSIFIED

2/2 - C-13

UNCLASSIFIED

PROCESSING DATE--16OCT70

IRC ACCESSION NO--AP0106654

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ANAL. OF 230,000 PHOTOGRAPHS TAKEN IN A C SUB3 H SUB8 BUBBLE CHAMBER OF PI PRIME NEGATIVE P INTERACTIONS AT 5.1 GEV-C SHOWED 28 NUCLEAR EVENTS WHOSE SECONDARY NEG. TRACKS COMING OUT THE INTERACTION STARS HAD THE CHARACTER OF THE XI PRIME NEGATIVE YIELDS 0 PLUS PI PRIME NEGATIVE DECAY. ONLY 6 OF THEM SATISFIED THE CRITERION FOR A XI HYPERON DECAY, I. E., IONIZATION OF EACH TRACK NOT CONTRADICTING THE XI DECAY HYPOTHESIS AND EFFECTIVE MASS (0 PLUS PI PRIME NEGATIVE) NOT DIFFERING FROM M EQUALS 1321 MEV-C PRIME2 MORE THAN 50 MEV-C PRIME2. ALL 6 EVENTS IN THE NUCLEAR STAR WERE UNEQUIVOCALLY IDENTIFIED AS THE FOLLOWING: (SHOWN ON MICROFICHE). THE TOTAL CROSS SECTION FOR XI PRIME NEGATIVE HYPERON PRODUCTION IN THE PI PRIME NEGATIVE-P INTERACTION WAS (2.9 NEGATIVE SUB1.0 POSITIVE PRIME1.8) MU B. THE CROSS SECTION INCREASED ON INCREASING THE INTERACTION ENERGY. FACILITY: U5'EDIN, INST. YAD. ISSLED., DUBNA, USSR.

UNCLASSIFIED

1/2 013 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--PRODUCTION OF XI HYPERONS IN TAU P INTERACTIONS AT 5.1 GEV-C-U-

AUTHOR--(05)-BUDAGOV, YU.A., VINGRADOV, V.B., VOLODKO, A.G., DZHELEPOV,
V.P., DUSHENKO, V.F.
COUNTRY OF INFO--USSR

SOURCE--JETP LETTERS (USA), VOL. 11, P. 28-31 (JAN. 1970)

DATE PUBLISHED----JAN70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--HYPERON, CASCADE, PROPANE BUBBLE CHAMBER, PARTICLE PRODUCTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3005/1795

STEP NO--US/0000/70/011/001/0028/0031

CIRC ACCESSION NO--AP0133700

UNCLASSIFIED

2/2 013

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0133700

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. REPORTS THE OBSERVATION OF THE
DECAYS OF THE CASCADE HYPERON XI YIELDS ALPHA PLUS PI PRIME NEGATIVE AND
A DETERMINATION OF ITS PRODUCTION CROSS SECTION IN PI P INTERACTIONS AT
5.1 GEV-C IN A METER PROPANE BUBBLE CHAMBER.

UNCLASSIFIED

1/2 008 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--SOURCES OF ODORS IN RUSSIAN LEATHER PRODUCTION. 2. USE OF PETROLEUM
REFINING BY PRODUCTS FOR LIMING CATTLE HIDES -U-
AUTHOR-(05)-DANISH, L.V., KOTOV, M.P., DUSHIN, B.M., ROMAN, A.S.,
TSIMBALENKO, A.A.
COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., TEKHNOL. LEGK. PROM. 1970, (1), 83-5
DATE PUBLISHED--70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--PETROLEUM PRODUCT, LEATHER, TECHNICAL STANDARD, SULFUR

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--2000/0947

STEP NO--UR/0323/70/000/001/0083/0085

CIRC ACCESSION NO--AP0124607

UNCLASSIFIED

2/2 008

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0124607

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. BY REPLACEMENT DURING LIMING OF CATTLE HIDES OF NA SUB2 S WITH A S CONTG. WASTE PRODUCT OF PETROLEUM REFINING, AND BY REDN. OF THE TIME OF ROTATION OF THE HIDES IN THE DRUM DURING SOAKING AND LIMING, THE AMT. OF ODORIFEROUS LEATHER WAS REDUCED FROM 28.5 TO 5.8PERCENT. THE TOTAL TIME OF LIMING WAS REDUCED FORM 44 TO 31 HR. THE RESULTANT LEATHER, AFTER TANNING, MET THE REQUIREMENTS OF THE ALL UNION STATE STD. FACILITY: KIEV. TAKHNOL. INST. LEKG. PROM., KIEV, USSR.

UNCLASSIFIED

1/2 070 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--EXPANSION OF THE RANGE OF ELECTRON CONCENTRATION MEASUREMENTS IN A
PLASMA BY USING A LASER INTERFEROMETER WITH OPTICAL SIGNAL PHASE
AUTHOR-(02)-DUSHIN, L.A., PRIVEZENTSEV, V.I.

COUNTRY OF INFO--USSR

SOURCE--TEPLOFIZIKA VYSOKIKH TEMPERATUR, VOL. 8, JAN.-FEB. 1970, P.
159-162

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--ELECTRON DENSITY, PLASMA MEASUREMENT, INTERFEROMETER, LASER
MODULATION, LASER APPLICATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/0300

STEP NO--UR/0294/70/00A/000/0159/0162

CIRC ACCESSION NO--AP0111573

UNCLASSIFIED

2/2 070

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0111573

ABSTRACT/EXTRACT--(U) GP-D- ABSTRACT. DISCUSSION OF A TECHNIQUE WHICH USES A LASER INTERFEROMETER FOR MEASURING THE ELECTRON CONCENTRATION IN PLASMAS. THE INTERFEROMETER IS EQUIPPED WITH A PHASE MODULATOR WHICH CONTINUOUSLY PERFORMS PHASE CALIBRATION AND, AS A CONSEQUENCE, EXPANDS THE EFFECTIVE RANGE OF MEASUREMENTS. ELECTRON CONCENTRATIONS FROM 100T TO 100,000T CAN BE MEASURED BY USING THIS TECHNIQUE. TRIAL APPLICATIONS OF THIS TECHNIQUE IN PLASMA ELECTRON CONCENTRATION MEASUREMENTS YIELDED RELIABLE RESULTS. FACILITY: AKADEMIIA NAUK UKRAINSKOI SSR, FIZIKO TEKHNICHESKII INSTITUT, DONETSK, UKRAINIAN SSR.

UNCLASSIFIED

USSR

UDC 669.3.048

KOZLOV, V. A., DUSHIN, L. N., OLESOVA, A. I.

"Vacuum Distillation of a Polymetal Alloy"

Tr. Ural'sk. n.-i. i proyekt. in-ta medn. prom-sti (Works of the Ural'sk Scientific Research and Planning and Design Institute of the Copper Industry), 1971, vyp. 14, pp 201-206 (from RZh--Metallurgiya, No 4, Apr 72, Abstract No 4G303)

Translation: When reducing silicate slag from a melt of slurry from copper electrolytic production with the addition of CaO and Na_2CO_3 , a polymetal alloy is obtained. The separation of the components of this alloy is possible by vacuum distillation. The process can be two stage or three stage. In the case of 3-stage distillation of the polymetal alloy, Pb and Sb are extracted in the commercial products, and Cu, Ag, and Ni are obtained in the form of intermediate products suitable for further refining. The degree of extraction of the metal in individual products by the scheme is 100% Pb, 84% Sb, and 94% Cu. In the case of the 2-stage process, the Pb and Sb are obtained in the form of an alloy: high-temperature distillation for driving off Pb, Sb, and Ag and low-temperature distillation for separating Pb and Sb from Ag.

1/1

1/2 040 UNCLASSIFIED PROCESSING DATE--090CT70
TITLE--ESTIMATION OF THE REPEATABILITY OF STRENGTH OF STRUCTURAL
FIBERGLASS PLASTICS IN CONICAL SHELLS -U-
AUTHOR-(03)-IVONIN, YU.N., DUSHIN, M.I., NESTEROVSKIY, N.V.
COUNTRY OF INFO--USSR
SOURCE--MEKhanika POLIMERov, VOL. 6, JAN.-FEB. 1970, P. 102-108
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS, PHYSICS, MECH., IND., CIVIL AND MARINE ENGR
TOPIC TAGS--FIBERGLASS, PLASTIC MECHANICAL PROPERTY, COMPOSITE MATERIAL,
PLASTIC FABRICATION, CONIC SHELL, MECHANICAL STRENGTH, CONSTRUCTION
MATERIAL, STATISTIC ANALYSIS
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAme--1992/1891 STEP NO--UR/0374/70/006/000/0102/0108
CIRC ACCESSION NO--AP0112871
UNCLASSIFIED

2/2 040

UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0112871

ABSTRACT/EXTRACT--(U) GP-0-- ABSTRACT. COMPARISON OF THE MECHANICAL PROPERTIES OF FIBERGLASS REINFORCED COMPOSITES HAVING A SHAPE OF CONICAL SHELLS, AND FABRICATED UNDER LABORATORY AND INDUSTRIAL CONDITIONS. THE TECHNIQUE OF THE IMPREGNATION OF A DRY PACKAGE UNDER PRESSURE IN A CLOSED MOLD IS USED. ON THE BASIS OF A STATISTICAL ANALYSIS OF THE EXPERIMENTAL DATA A SUBSTANTIAL DIFFERENCE IS DEMONSTRATED BETWEEN THE STRENGTHS OF SHELLS MADE UNDER LABORATORY AND INDUSTRIAL CONDITIONS.

UNCLASSIFIED

1/2 024 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--INTEGRATING DIGITAL VOLTMETER ERROR -U-
AUTHOR--(02)--DUSHIN, YE.M., KAPUSTIN, A.N. D
COUNTRY OF INFO--USSR
SOURCE--LENINGRAD, IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY.
PRIBOROSTROYENIYE, NO 2, 1970, PP 12-15
DATE PUBLISHED--70
SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR., METHODS AND EQUIPMENT
TOPIC TAGS--VOLTMETER, DIGITAL SYSTEM, DIGITAL INTEGRATOR, FREQUENCY
STABILITY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1999/1679 STEP NO--UR/0146/70/000/002/0012/0015
CIRC ACCESSION NO--AT0123503
UNCLASSIFIED

2/2 024

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AT0123503

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHORS STUDY THE DEPENDENCE OF INTEGRATING DIGITAL VOLTMETER ERROR ON THE FREQUENCY VARIATION OF ADDITIVE SINUSOIDAL AND NONSINUSOIDAL INTERFERENCE DURING VARIOUS PHASE SHIFTS BETWEEN THE MOMENTS OF INTEGRATION ONSET AND PASSAGE OF THE INTERFERENCE CURVE THROUGH ZERO. THEORETICAL AND EXPERIMENTAL DATA FOR THIS RELATIONSHIP ARE GIVEN. FACILITY: THE LENINGRAD ELECTROTECHNICAL INSTITUTE IMENI V. I. UL'YANOV LENIN.

UNCLASSIFIED

USSR

UDC 669.285.018.8:620.186:669-977

YEMEL'YANOVA, L. I., DUSHIN, YU. A., SOLOMKO, YU. V.

"Variation of the Structure of MT Alloy in the Case of High-Temperature Holding in an Inert Gas Stream"

Metallovedeniye -- V sb. (Physical Metallurgy -- collection of works), No 14, Leningrad, Sudostroyeniye Press, 1970, pp 194-199 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4I760)

Translation: The structure of MT alloy was studied after operation in an argon stream at 1,700° and holding from 10 minutes to 20 hours. Complex redistribution of the alloy components under the effect of a mixture of O₂ in argon was detected. The experimental results agree with thermodynamic and diffusion estimates. There are 4 illustrations, 1 table, and an 8-entry bibliography.

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USSR

UDC 8.74

BARMINSKIY, K. O., GUBIN, A. I., DUSHKIN, B. M.

"Operation on Arrays and Their Program Execution"

Tr. NII upravl. mashin i sistem (Works of the Scientific Research Institute of Control Machines and Systems), 1972, vyp. 6, pp 211-217 (from RZh-Kibernetika, No 7, Jul 72, Abstract No 7V603)

Translation: A study was made of one of the possible approaches to the construction of standard programs for processing large files of documents stored on magnetic tape. It must be noted that along with the preparation and correction of the files and also printing the data out, the step of internal processing of the files is standard for many problems solved in automatic control systems, in particular, for accounting and planning problems.

1/1

USSR

UDC 681.3.06:51

DUSHKIN, B. M., OSADCHIY, N. I., SOKOLOVA, L. I.

"Principles of Construction of Programming Systems for the Class of Problems Encountered in Automatic Industrial Enterprise Control System"

Tr. NII Upravl. Mashin i Sistem [Works of Scientific Research Institute for Control Machines and Systems], No 5, 1971, pp 111-115, (Translated from Referativnyy Zhurnal, Kibernetika, No 10, 1971, Abstract No 10 V787).

NO ABSTRACT.

1/1

USSR

UDC: 8.74

BARMINSKIY, K. O., GUBIN, A. I., and ~~DUSHEKIN, B. M.~~

"Operations on Arrays and Their Programmed Realization"

Tr. NII upravl. mashin i sistem (Transactions of the Scientific Research Institute of Machine and System Control) No 6, 1972, pp 211-217 (from RZh--Matematika, No 7, 1972, Abstract No 7V603)

Translation: One possible approach to the construction of standard programs for processing large **array** of documents preserved on magnetic tape is considered. It should be noted that, in addition to preparing and correcting the **array** as well as transmitting the information for printout, the stage of internal processing of the **array** is typical of many problems solved in automatic control systems, particularly of computing-planning problems.

1/1

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USSR

UDC: 778.4

KOTOSONOV, N. V., KHLIVACH, Ya. L., KOLESNIKOV, A. I., BAZARSKIY, O. V., DUSHKIN, I. R., and VISLYANSKIY, A. G.

"Recording and Restoring Microwave Holograms With Gradations of the Interference Picture"

Moscow, Radiotekhnika i elektronika, No 8, 1972, pp 1731-1732

Abstract: The purpose of this brief communication is to compare the quality of images restored from binary and multigradation radioholograms in the optical range. A block diagram of the hologram recording equipment used for the experiments described in this paper is shown, and a description of its operation given. The radiation source used was a type OV-22 backward wave tube, with a frequency of 125 GHz. The method of processing the obtained recordings is described. For restoration, the hologram was photographically reduced and was then restored in the diverging beam of a helium-neon laser type LG-36A. Photographs of the object, its image restored by multigradation hologramming, and the image restored by binary hologramming, are reproduced for comparison. The experiment showed that while the resolving capability of binary and multigradation holography are the same,

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USSR

UDC: 778.4

KOTOSCNOV, N. V., et al, Radiotekhnika i elektronika, No 8, 1972,
pp 1731-1732

the quality of the restored image is better with the latter
method.

2/2



Water Treatment

USSR

UDC: 621.318.3:621.564.322

SHAKHOV, A. I., Candidate of Technical Sciences, and DUSHKIN, S. S.

"Magnetic Processing of Still Liquor"


Moscow, Khimicheskoye i Neftyanoye Mashinostroyeniye, No 3, 1970, pp 18-19

Abstract: Deposits formed in pipes of evaporation equipment used in calcium chloride production present a definite operational problem.

The Khar'kov Institute of Communal Construction Engineers ran tests on the effect of magnetic processing on deposition rate. Still liquor of composition 120.7 g/l Cl^- , 17.2 g/l Ca^{++} , 0.68 g/l CH^- and 0.55 g/l SO_4^{--} was passed through magnetic fields of various intensities.

Significant reduction of deposition rate was observed with optimum results for field intensity of about $5 \cdot 10^4$ a/m and flow rate of 0.5-0.8 m/sec.

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1/2 011 UNCLASSIFIED PROCESSING DATE--02OCT70
TITLE--MAGNETIC TREATMENT OF STILL LIQUOR (FROM THE PRODUCTION OF CALCIUM
CHLORIDE) -U-
AUTHOR--(02)-SHAKHOV, A.I., DUSHKIN, S.S. 
COUNTRY OF INFO--USSR
SOURCE--KHIM. NEFT. MASHINOSTR. 1970, (3), 18-19
DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--CALCIUM CHLORIDE, MAGNETIC FIELD, MAGNETIC EFFECT

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1990/1304 STEP NO--UR/0314/70/000/003/0019/0019
CIRC ACCESSION NO--AP0109388
UNCLASSIFIED

2/2 C11
CIRC ACCESSION NO--AP0109388 UNCLASSIFIED PROCESSING DATE--02OCT70
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IMPOSED MAGNETIC FIELD OF (1-9)
TIMES 10 PRIME4 A-M WERE STUDIED AS A MEANS OF REDUCING FOULING DEPOSIT
FORMATIONS IN EVAPORATOR TUBES. DEPOSIT FORMATIONS WERE OBSD. IN AN
ELEC. HEATED QUARTZ TUBE ON SOLNS. CONTG. Cl NEGATIVE 120.7, CA PRIME2
POSITIVE 17.2, OH NEGATIVE 0.68, AND SO SUB4 PRIME2 NEGATIVE 0.55 G-L.
AT LIQ. FLOW OF 0.1-1.0 M-SEC. MAGNETIC FIELDS OF (1.0-5.0) TIMES 10
PRIME4 A-M WERE EFFECTIVE IN REDUCING DEPOSIT FORMATIONS, DURING THE
EVAPN. OF KCl SOLNS.; AT THE HIGHER FLOWS THIS EFFECT WAS REDUCED.

UNCLASSIFIED

1/2 011 UNCLASSIFIED PROCESSING DATE--02OCT70
TITLE--MAGNETIC TREATMENT OF STILL LIQUOR (FROM THE PRODUCTION OF CALCIUM
CHLORIDE) -U-
AUTHOR--(02)-SHAKHOV, A.I., DUSHKIN, S.S.
COUNTRY OF INFO--USSR
SOURCE--KHIM. NEFT. MASHINOSTR. 1970, (3), 18-19
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--CALCIUM CHLORIDE, MAGNETIC FIELD, MAGNETIC EFFECT
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REFL/FRAME--1990/1304 STEP NO--UR/0314/70/000/003/0018/0019
CIRC ACCESSION NO--AP010938H
UNCLASSIFIED

2/2 C11

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0109388

ABSTRACT/EXTRACT--(U) GP-3- ABSTRACT. IMPOSED MAGNETIC FIELD OF (1-9) TIMES 10 PRIME4 A-M WERE STUDIED AS A MEANS OF REDUCING FOULING DEPOSIT FORMATIONS IN EVAPORATOR TUBES. DEPOSIT FORMATIONS WERE OBSD. IN AN ELEC. HEATED QUARTZ TUBE ON SOLNS. CONTG. Cl NEGATIVE 120.7, CA PRIME2 POSITIVE 17.2, OH NEGATIVE 0.68, AND SO SUB4 PRIME2 NEGATIVE 0.55 G-L. AT LIQ. FLOW OF 0.1-1.0 M-SEC. MAGNETIC FIELDS OF (1.0-5.0) TIMES 10 PRIME4 A-M WERE EFFECTIVE IN REDUCING DEPOSIT FORMATIONS, DURING THE EVAPN. OF KCl SOLNS.; AT THE HIGHER FLOWS THIS EFFECT WAS REDUCED.

UNCLASSIFIED

USSR

UDC 621.382.2

BEKMURATOV, M.F., DUSHKIN, V.A., MURYGIN, V.I. [Moscow Institute Of Electronics Techniques]

"Current Variations In Diode Structures Made Of High-Resistance Gallium Arsenide Compensated By Titanium"

Fizika i tekhnika poluprovodnikov, Vol 6, No 4, Apr 1972, pp 632-634

Abstract: Some results are presented of a study of noise and periodic current variations in S-diode structures of gallium arsenide with an admixture of titanium at the parts of the voltampere characteristic with positive differential resistance. The material for production of the specimen, grown by the Czochralski method, was of two types: p-type with resistivity on the order of $\rho = 10^5 \text{ ohm.cm}$ and a higher resistance n-type material with a resistance $\rho = 10^6 \text{ ohm.cm}$. The conditions of formation and the character of the noise variations depended on the magnitude of the resistivity of the starting material and the form of the voltampere characteristic of the device. With specimens produced from a material with a resistivity close to intrinsic and with a significant voltage drop in the region of negative resistance, noise variations were observed in the frequency band up to 15 MHz with an integral amplitude of 100-200 mv. (The measurements were conducted with the S 4-8 spectrum analyzer and a V3-13 voltmeter.)

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USSR

BEKMURATOV, M.F., et al, Fizika i tekhnika poluprovodnikov, Vol 6, No 4, Apr 1972, pp 632-634

The frequency of the fundamental harmonic of the periodic current variations was found in the limits of from several megahertz up to tens of megahertz (up to $40 \div 50$ MHz for individual specimens). The dependence of the frequency on the current flowing through the device was nonmonotonic. 3 fig. 6 ref. Received by editors, 28 June 1971.

2/2

USSR

UDC 612.336.31-019:599.323.4

DUSHKIN, V. A., and KUSINA, R. F., Scientific Research Laboratory of Experimental Biological Models, Academy of Medical Sciences USSR, Moscow

"Features of the Intestinal Microflora of Syrian Hamsters"

Moscow, Laboratornoye Delo, No 3, 1972, p 190

Abstract: More viable than other laboratory animals, Syrian hamsters are particularly insusceptible to intestinal diseases. Bacteriological seedings and quick analyses on milk were made of the feces of 75 sexually mature hamsters to ascertain the cause of this immunity. Aerobic seedlings produced insignificant microfloral colonies, and only at higher seeding dilutions, while milk solid smears produced large lactic acid bacterial colonies. None of the usual symbionts of pathogenic enterobacteria were detected. Thus facultative anaerobes, chiefly lactic acid bacteria, compose the predominant intestinal population and promote resistance against bacterial infection.

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USSR

KOZMOLINSKIY, F., and DUSHKOV, B., Candidates of Medical Sciences

"Vibration Isolation"

Moscow, Meditsinskaya Gazeta, 7 Jun 72, p 3

Abstract: The use of modern machines has raised the level and increased the spectral composition of vibrations, necessitating a complex analysis of the relationship between man and machine and of man's reaction to vibration. It has been established that changes in the operator's position alter the frequency characteristics of the body and the damping properties of the "man-machine system." The mechanism of distribution of vibrations over the bone tissues, the blood flow in the vessels under the effect of vibration, and the functional state of the operator must be thoroughly investigated. Sanitary-hygienic vibration norms and criteria of vibro-isolation should be established with increased utilization of electronic computer technique. Living organisms should be studied on the molecular and cellular level, with special attention to vibration effect on receptors and properties of nerve cells. The primary reaction to vibration effect is characterized by prevalence of parasympathetic substances in the blood, and the subsequent changes in the ratio of contents of sympathicotropic and parasympathicotropic mediators is characterized by phase flow of significant duration. Marked changes have been

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USSR

KOSMOLINSKIY, F., and DUSHKOV, B., Meditsinskaya Gazeta, 7 Jun 72, p 3

revealed in the function of enzymes, with an aftereffect lasting for weeks and months. With high mental efficiency intact, some pathological body structural and functional disturbances were, however, observed. Regularities in the deviations within the histamine-diamine oxidase system point to the adaptive properties of the regulatory systems, demanding further study of the mechanisms of humoral regulation under the vibration effect. Temporary and spatial peculiarities under the effect of noise must also be taken into account.

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USSR

UDC 61:658.387

KOSILOV, S. A., and DUSHKOV, B. A.

Mediko-Biologicheskiye Problemy NOT (Medical-Biological Problems of the Scientific Organization of Labor), Moscow, "Meditsina," 1971, 176 pp

Translation: Annotation: The book considers ways and methods of developing and applying the physiologically substantiated proposals advanced by medical workers to the scientific organization of labor at industrial enterprises. A description is given of the physiological processes which determine active adaptation of the human organism to concrete conditions of productive labor, and methods are pointed out for isolation, analysis, and optimal transformation directed to raising the work capacity and labor productivity and strengthening workers' health. The purpose of the book is to help medical workers formulate and optimally resolve medical and physiological questions of NOT (Scientific Organization of Labor).

The publication is intended for health organizers and medical workers with an interest in questions of NOT.

Foreward: At the present time, the proposition that the central place in the unified, complex process of production interaction between man and machine belongs to man is receiving increasingly wide recognition. For this reason, physiologically and hygienically sound recommendations directed to optimal

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USSR

KOSILOV, S. A., and DUSHKOV, B. A, Mediko-Biologicheskiye Problemy NOT, Moscow, "Meditsina," 1971, 176 pp

regulation of the physiological processes taking place during human work have become essential for efficient organization of labor processes.

Medical workers and representatives of other special fields (economists, engineers, norm experts, and others) are being involved in the development of measures within the NOT system. The specialized scientific literature now available on medical-biological questions of NOT is primarily presented in journal articles, and therefore the need has arisen for larger publications on questions of theory, methodology, practice, and organizing physiological and hygienic research at the modern industrial enterprise. This book familiarizes medical workers with new possibilities for improving labor, and also solves a number of concrete tasks in scientific organization of labor and adapting the human being to production conditions. For readers wishing to make a thorough study of particular questions, a list of additional literature is given.

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KOSILOV, S. A., and DUSHKOV, B. A., Mediko-Biologichesiye Problemy NOT, Moscow, "Meditsina," 1971, 1971, 176 pp

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Instruments and Measurements

USSR

UDC: 621.3.038.8:621.317.1

~~DUSHEV~~ I. I., KARLOV, N. V., KRYNETSKIY, B. B., NISHIN, V. A.,
and PETROV, R. P.

"Heterodyne Method for Measuring the Diffusion Component of
Laser Mirrors"

Kratkiye soobshch. po fiz. (Short Communications in Physics)
No 10, 1971, pp 10-15 (From RZh---Radiotekhnika, No 4, 1972,
Abstract No 4A311)

Translation: The description is given of a heterodyne method for determining the diffusion component; its advantages, narrow reception diagram and high sensitivity, make it an effective measurement method. A single-mode CO₂ laser with a 5-W output power is used. The radiation receiver is a GeHg photoresistor operating at the temperature of solid nitrogen. The results are given of measurements of the diffusion component losses for gold mirrors made by various methods with a coating thickness of 1500 Å, and an estimate is made of the contribution of the diffusion component and of the dimensions of the microscopic inequalities in the mirror surfaces. A. K.

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Infrared Rays

USSR

UDC 621.396.62.029.7

DUSHKOV, I. I., KARLOV, N. V., KRYNETSKIY, B. B., MISHIN, V. A., PETROV, R. P.

"Application of the Duality Theorem to Investigate the Antenna Characteristics of Superheterodyne Photoreceivers [Infrared Heterodyne Detection]"

Moscow, Radiotekhnika i elektronika, Vol XVII, No 2, 1972, pp 345-350

Abstract: Results are presented from measuring the radiation directivity pattern of a heterodyne receiver of CO₂-laser emission. Application of the heterodyne receiver constricts the directivity pattern to 0.007-0.01 rads.

Figures are presented showing the results of measuring the directivity patterns of the heterodyne receiver in the 10.6 micron range. For comparison of the directivity pattern of direct and heterodyne reception, the directivity was measured for Ge-Au and Ge-Zn-Sb receivers operating as videodetectors. The application of the heterodyne method of reception narrows the directivity pattern by 15 times and provides significant (20 decibels) gain in the signal.

The application of the duality theorem when measuring the directivity pattern of a heterodyne receiver in the infrared range permits quite exact and simple estimation of the antenna characteristics of the optical heterodyne

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USSR

DUSHKOV, I. I. et al, Radiotekhnika i Elektronika, Vol XVII,
No 2, 1972, pp 345-350

receiver. Use of the method of direct measurement of the directivity pattern permits more exact measurement of the antenna characteristics of the heterodyne receiver of infrared radiation and estimation of the quality of different optical elements.

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USSR

UDC: 621.385:530.145.6:623

DUSHKOV, I. I., KARLOV, N. V., KRYNETSKIY, B. B., MISHIN, V. A., PETROV, R. P.

"Antenna Characteristics of a Heterodyne Receiver of CO₂ Laser Emission"

Kratkiye soobshch. po fiz. (Brief Reports on Physics), 1971, No 1, pp 40-44
(from RZh-Radiotekhnika, No 5, May 71, Abstract No 5D487)

Translation: The directivity of a heterodyne receiver of CO₂ laser emission was studied directly and by means of the generalized reciprocity theorem. The gain in the output signal with the use of heterodyne reception is 20 DB. The radiation pattern is narrowed by a factor of 15 to 0.007 radian. A. K.

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USSR

UDC: 518

GABDULKHAYEV, B. G., DUSHKOV, P. N., Kazan'

"Concerning Direct Methods of Solving Singular Integral Equations of the First Kind"

Kazan', Izvestiya VUZov: Matematika, No 7(134), Jul 73, pp 12-23

Abstract: A number of problems in mechanics reduce to the singular integral equation

$$L\varphi \equiv \frac{1}{\pi} \int_{-1}^1 \frac{\varphi(\tau)}{\tau-t} d\tau + \frac{1}{\pi} \int_{-1}^1 h(t, \tau) \varphi(\tau) d\tau = f(t); \quad (1.1)$$

where h (with respect to both arguments) and f are variable functions, and the singular integral is understood in the sense of the principal Cauchy-Lebesgue value. In this paper an approximate solution of equation (1.1) is found by the methods of interpolation. Particular emphasis is placed on substantiating the examined computational schemes on the basis of a modification of the general theory of approximation methods (L. V. Kantorovich). Convergence in the mean is proved for the given methods, and uniform convergence is derived as a consequence. Errors are evaluated.

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- 4 -

1/2 021 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--RELATION BETWEEN THE PHASE DIAGRAM AND COMPOSITION PROPERTY DIAGRAM
OF THE INDIUM TIN SYSTEM -U-
AUTHOR--(03)--DUTCHAK, YA.I., KORSUNSKIY, A.M., KLIM, M.M.
COUNTRY OF INFO--USSR D
SOURCE--IZV. VYSSH. UCHEB. ZAVED., FIZ. 1970, 13(5), 36-41
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY, MATERIALS
TOPIC TAGS--PHASE DIAGRAM, INDIUM, TIN, CRYSTAL LATTICE STRUCTURE,
ELECTRIC CONDUCTIVITY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3008/0634 STEP NO--UR/0139/70/013/005/0036/0041
CIRC ACCESSION NO--AT0137719
UNCLASSIFIED

2/2 021

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AT0137719

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. VISCOSITY COEFF. (NU) AND THE ELEC. COND. (N) WERE MEASURED IN THE SYSTEM IN-SN IN THE WHOLE CONCN. RANGE BY THE ROTATION VIBRATIONAL METHOD AT M.P. TO 700DEGREES OR BY THE ROTATING MAGNETIC FIELD METHOD AT 20-700DEGREES, RESP. A SUDDEN CHANGE IN BOTH NU AND N WAS OBSD. AT X EQUALS 40-55 AT.PERCENT SN. ON PLOTS NU VS. X AND N VS. X CONSTRUCTED AT EQUAL TEMP. DIFFERENCES ABOVE THE LIQUIDUS LINE, AN ANOMALOUS INCREASE IN BOTH NU AND N WAS OBSD. AT X EQUALS 20-48 CORRESPONDING TO THE SUPPOSED EXISTENCE OF THE BETA PHASE. THE GIBBS FREE ENERGY OF THE VISCOUS FLOW INCREASES LINEARLY WITH TEMP. AND THE CURVES LN NU VS. 1 OVER T ARE STRAIGHT LINES FOR ALL SAMPLES EXCEPT FOR THOSE WITH X EQUALS 20-40 ABOVE 500DEGREES. THESE DEVIATIONS FROM LINEARITY ARE DUE TO CHANGES IN THE NEAREST NEIGHBOR STRUCTURE IN THE LATTICE. FACILITY: L'VOV. GOSUNIV. IM. FRANKO, LVOV, USSR.

UNCLASSIFIED

USSR

UDC: 532

DUTCHAK, Ya. Y., KLYM, M. M., FRENCHKO, V. S.

"Short-Range X-Ray Study in Bi-Pb-Sn Eutectic in the Liquid State"

Visnyk L'viv. un-tu. Ser. Fiz. (L'viv University Herald. Physics Series),
1971, vyp. 6(14), pp 57-59, 109 (from RZh-Fizika, No 6, Jun 72, Abstract
No 6Yel43)

Translation: The paper presents the results of an x-ray study of a eutectic comprised of 41.9 at.% Bi + 21.1 at.% Pb + 37% Sn in the liquid state. Analysis of radial distribution curves shows quasi-eutectic distribution of atoms in this alloy in the complete melting region. It is found that when the temperature is raised to 433°K, the structure of the melt is described by statistical distribution of atoms. Authors' abstract.

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Acc. Nr: **AP0043664**

Ref. Code: UR 0056

PRIMARY SOURCE: Zhurnal Eksperimental'noy i Teoreticheskoy
Fiziki. 1970, Vol 58, Nr 2, pp **460-474**

**ABSORPTION SATURATION IN THE ELECTRON-PHONON
SPECTRUM OF CdSe**

Duta, A. F.; Timofeyev, V. B.;
Fayn, V. M.; Yashchin, E. G.

The dependence of the absorption coefficient in the exciton-phonon spectrum of semiconductors on intensity of the incident monochromatic radiation is analyzed theoretically. Two possible absorption saturation mechanisms are considered. One, which may be termed an integral mechanism occurs on conservation of the nonequilibrium exciton distribution in the band and when intraband relaxation is more rapid than escape of excitons from the band. The second, so-called differential saturation mechanism, is characterized by a nonequilibrium distribution of excitons in the band and takes place if the rate of exciton escape from any band point is greater than the rate of intraband relaxation. A Q-switched ruby laser was used for studying nonlinear absorption in the exciton-phonon spectrum in CdSe single crystals at 80-120° K. The integral saturation mechanism is found to occur. The mean exciton lifetimes in the band are found; in the indicated temperature range they vary between 10^{-8} and $3 \cdot 10^{-8}$ sec.

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DUTKINA

T.A.

So: JPRS 58279
14 June 1963

ALLOYING EPITAXIAL LAYERS OF SILICON WITH BORON AND ARSENIC USING GAS DISCHARGE
Article by T.A. Dutkina, G. F. Isenkov, V. V. Nikolayeva, L. N. Khramova,
Novosibirsk Technological Institute of Silicon Chemistry, Novosibirsk, Russia, 1962,
Russian Chemical Reviews, Part 2, 1962, pp. 72-84

The problem of controlled alloying of epitaxial films by semiconducting materials during growth time is one of the most important in epitaxial technology.

The recently published [1] method of alloying silicon epitaxial layers by creating a spark discharge in hydrogen or SiCl_4 between electrodes controlled by the required mixture is extremely interesting inasmuch as the processes involved in addition, with corresponding selection of the electrodes and the number of other semiconducting materials.

In view of the greatest practical importance of epitaxial technology for manufacturing the silicon transistors, this alloying method was investigated in the example of silicon epitaxy. The growth was carried out by the method of reducing silicon tetrachloride with hydrogen in high-frequency devices with a vertical reactor (Figure 35).

Experiment

A study was made of the alloying of the donor (arsenic) and acceptor (boron) impurities.

In contrast to reference [1] where the pulse generator was used, the feed to the discharge came from a high-voltage DC source. The electrodes were rods made of pure arsenic or lanthanum boride. In all the alloying experiments, the mole ratio of SiCl_4/H_2 was 0.01, the growth temperature was 1250°C , the total hydrogen flow rate through the reactor was 300 liters/hour. The gas distribution system had three main lines: 1 — the basic hydrogen flow line, 2 — the SiCl_4 saturation line, and 3 — the alloying line. For all the manipulations with flow rates, the total flow rates through lines 1 and 3 remained constant.

DUTOV, A.M.

space medicine

SO: JPRS 54768
22 DEC 71

UDC 612.886:612.815.1

ROLE OF VISCERAL AFFERENTATION IN VESTIBULAR SYSTEM ACTIVITY
[Article by V. S. KAYAR and A. M. DUTOV, *Ac. Sci. - Space Medicine*
1 Medicine, Russian, Vol 5, No 2, 1971, submitted for publication 1 March
1971, pp 9-14]

Abstract: Chronic experiments were performed on rabbits to study the effect of stimulating gastric and rectal mechanoreceptors on postural-tonic and vestibular-oculomotor reflexes of the labyrinth evoked in response to vestibular excitation. Visceral irritation of moderate intensity decreased the vestibular apparatus stimulation threshold, increased the reflex time, and shifted the maximum of muscular discharges toward weaker labyrinth stimulation. They also increased the frequency and amplitude of rotational and post-rotational nystagmus, thus indicating an increase in vestibular excitability under these circumstances. The mentioned parameters of postural-tonic and vestibular-oculomotor reflexes declined in response to relatively weak visceral stimulation. Against a background of adreno- and cholinolytics (aminazine and amyral) interoceptive afferentation caused no distinct changes in vestibular responses to labyrinth stimulation.

During recent years much attention has been devoted to the problem of vestibular-autonomic disorders and the motion sickness syndrome. These phenomena are regarded as a general body reaction caused by impairment of the interrelationship of afferent systems (Ye. M. Yeganov, 1955, 1968; V. V. Masvetsky; N. M. Stakyan, et al., and others). Extralabyrinthal factors are of great importance (A. P. Popov; G. I. Komendantov; I. M. Khuzeni; A. S. Deltiyev, and others). However, in an analysis of the interaction of the vestibular system with other analyzers and the autonomic nervous system too little attention is given to afferentation from the

USSR

UDC: 612.886.014.47:531.15

DUTOV, A. M., Chair of Physiology, Ivano-Frankovsk Medical Institute

"Interoceptive Influences on Vestibular Nystagmus"

Moscow, Byulleten' Eksperimental'noy Biologii i Meditsiny, Vol 70, No 11, Nov 70, pp 25-26

Abstract: Rabbits were rotated for 20 seconds and the mechanoreceptors of the stomach and rectum were then stimulated by inflating inserted rubber balloons. Stimulation of the visceral receptors affected both the frequency and amplitude of rotatory nystagmus. Weak stimulation of the mechanoreceptors of the rectum (pressure of 40 to 60 mm in the balloon) and stomach (20 to 30 mm Hg) produced little significant change in the frequency and amplitude of nystagmic movements. Stronger stimulation of the rectal mechanoreceptors (80 to 100 mm Hg) increased the frequency of the nystagmic movements by 11.3% and their amplitude by 11%. The intensity of interoceptive stimulation also affected the parameters of post-rotatory nystagmus. Weak stimulation of the rectum shortened the duration of the reaction by 14.23%, whereas strong stimulation lengthened it by 10.3%. These experiments show that visceral impulses play a role in reflex regulation and functional "adjustment" of the vestibular apparatus.

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1/2 023 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--EFFECT OF A THREADED SECTION AND THE METHOD OF PRODUCING IT ON THE
RESISTANCE OF ,CARBON, STEEL SAMPLES TO CORROSION CRACKING -U-
AUTHOR-(03)-DUTSYAK, Z.G., KHITARISHVILI, M.G., BABEY, YU.I.
COUNTRY OF INFO--USSR
SOURCE--FIZ. KHIM. MEKHAN. MAT., 1970, 6, (1), 112-113
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--CORROSION CRACKING, CARBON STEEL, AMMONIUM NITRATE, STRESS
ANALYSIS
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3003/0218 STEP NO--UR/0369/70/006/001/0112/0113
CIRC ACCESSION NO--AP0129474
UNCLASSIFIED

2/2 023

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0129474

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE RESISTANCE OF C STEEL (ST. 45) SAMPLES TO CORROSION CRACKING IN A BOILING NH SUB4 NO SUB3 SOLUTION WAS STUDIED AS A FUNCTION OF THE TYPE OF STRESS RAISER INCORPORATED IN THE SAMPLE (SCREW THREADS, GROOVES, ETC.) AND THE MANNER OF PRODUCING SUCH STRESS CONCENTRATIONS. SAMPLES WITH CUT SCREW THREADS HAVE A LOWER RESISTANCE TO CORROSION CRACKING THAN THOSE CONTG. A GROUND THREAD. THE DIFFERENCE BETWEEN GRINDING AND MACHINING WITH A STEEL TOOL WAS GREATEST IN THE CASE OF A SINGLE GROOVE AND LEAST IN THAT OF A COMPLETE THREAD, THERE BEING A CERTAIN "AVERAGING" EFFECT IN THE LATTER CASE.

UNCLASSIFIED

USSR

UDC: 621.3.037.3

DUVAKIN, A. P., Candidate of Physical-Mathematical Sciences

"Optimizing the Relative Digital Information Transmission Speed
over Excessively Used Communications Lines"

Moscow, Priboiy i Sistemy Upravleniya, No 9, 1973, pp 21-22

Abstract: Asserting that the transmission of digital information with sufficiently stationary channel characteristics is best provided by systems with feedback, the author considers a simple procedure for the transmission of messages in blocks over a semi-duplex channel. A diagram of this procedure is given. An optimal value is found for the length of the information part of one block, and formulas are obtained which can be used for computing transmissions over existing communications channels if the lengths of the messages are transmitted. It is found that such computations are valid for block lengths equal to or greater than eight symbols. As an example of the computations, the author considers the case of information transmission over a channel at the speed of 1200 bauds or 200 symbols per second.

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Acc. Nr.

140053760

Abstracting Service:
CHEMICAL ABST.

6-70

Ref. Code

UR0080

112011x Degradation of copolymers of vinylene glycol with vinyl alcohol and ethylene under the influence of alkali. Kli-
nova, O. M.; Klubikova, L. E.; Duvakina, N. I.; Zentsova, G. A.
(Leningrad. Tekhnol. Inst. im. Lensovet, Leningrad, USSR).
Zh. Prikl. Khim. (Leningrad) 1970, 43(1), 217-20 (Russ). Poly-
(vinyl alc.) (I) (contg. 1.3 mole % α -glycol units), vinyl alc.-vinyl-
ene glycol (II) copolymers (III) (contg. 8.9 and 15 mole % α -gly-
col units), and II-ethylene copolymers (contg. 6 and 13 mole %
II) were subjected to oxidative thermal degradation at $70 \pm 1^\circ$
for 3 hr. Increased content of α -glycol units in III gave higher oxi-
dative degradation resistance and resistance to a 40% aq. KOH
soln. Introduction of glycol units into I increased the stability
presumably by the formation of intramol. H bonds, which inhib-
ited dehydration.
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UDC: 8.74

DUVALYAN, A. V.

"A Pattern Recognition Algorithm Based on Sequential Analysis"

Moscow, Izbr. tr. Vses. mezhvuz. simpoz. po prikl. mat. i kibernet., Gor'kiy, 1967 (Selected Works of the All-Union Intercollegiate Symposium on Applied Mathematics and Cybernetics, Gor'kiy, 1967), "Nauka", 1973, pp 263-266 (from RZh-Kibernetika, No 7, Jul 73, abstract No 7V686 by the author)

Translation: A recognition algorithm for normally distributed images is proposed which appreciably reduces the number of computations during recognition by a slight increase in the number of calculations in the teaching stage. A matrix is found for each image which reduces the covariation matrix of this image to a unit matrix. In recognition of an unknown object, vectors are found for the product of the resultant matrix by the object vector. If the unknown point belongs to some image, then the components of the corresponding vector are independent and have normal distribution with unit variance. Methods of sequential analysis are used to find the vector for which the hypothesis of independence of components and unit variances is most likely.

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USSR

UDC 8.74

DUVALYAN, A. V., ZVEREV, V. Yu.

"On a Sequential Algorithm for Pattern Recognition"

V sb. Avtomat. upr. i vychisl. tekhn. (Automatic Control and Computer Technology -- Collection of Works), No. 10, Moscow, "Mashinostroyeniye", 1972, pp 206-220 (from RZh-Matematika, No 9, Sep 72, Abstract No 9V674)

Translation: In the statistical theory of pattern recognition sequential analysis methods make it possible to produce effective recognition algorithms. A pattern recognition algorithm is proposed in this paper, the indicators of which satisfy a multidimensional normal probability distribution. The algorithm is based on the use of a generalized sequential criterion for the probability ratios. Learning of the algorithm is achieved with the aid of a recurrent procedure of the stochastic approximation method. The effectiveness of the proposed algorithm is supported by computer experiments on the recognition of three types of heart diseases from electrocardiograms. Authors abstract.

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USSR

UDC 8.74

DUVALYAN, A. V., ZVEREV, V. YU.

"A sequential Pattern Recognition Algorithm"

V sb. Avtomat. upr. i vychisl. tekhn. (Automatic Control and Computer Engineering -- collection of works), Vyp. 10, Moscow, Mashinostroyeniya Press, 1972, pp 206-220 (from RZh-Kibernetika, No 9, Sep 72, Abstract No 9V674)

Translation: In statistical pattern recognition theory the methods of sequential analysis permit us to create effective recognition algorithms. In this paper a pattern recognition algorithm is proposed the attributes of which satisfy the multidimensional normal probability distribution.

The algorithm is based on using the generalized sequential criterion of the probability ratios. The algorithm is trained by means of the recurrent procedure of the method of stochastic approximation. The effectiveness of the proposed algorithm is confirmed by experiments on a digital computer in the recognition of three types of cardiac disease by electrocardiograms.

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USSR

UDC 621.315.592:546.88

SLOTIN, V.V., BUTURLIN, A.I., DUVANOV, G.V., CHISTYAKOV, YU.D.

"Thermodynamic Analysis Of Hydrolysis Reaction Of Silicon Tetrachloride Vapors"

Sb.nauch.tr. po probl.mikroelektron. Mosk. in-ta elektron.tekhn. (Collection Of Scientific Works On Problems Of Microelectronics). Moscow Institute Of Electronics Technology), 1972, Issue 8, pp 193-199 (from RZh:Elektronika i yeye primeneniye, No 9, Sept 1972, Abstract No 9B81)

Translation: A thermodynamic analysis is made of the hydrolysis reaction of SiCl_4 . The temperature is determined for preparation of silica gel type products ($\sim 60^\circ \text{C}$). The role is considered of the hydrolysis reaction of SiCl_4 vapors in a chloride process for preparation of autoepitaxial layers of Si. 4 ref. Summary.

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USSR

UDC 621.315.592:546.28

SLOTIN, V.V., BUTURLIN, A.I., DUVANOV, G.V., CHISTYAKOV, YU.D.

"On The Possibility Of Control Of The Composition Of A Vapor-Gas Mixture In The Chloride Process Of Preparing Autoepitaxial Layers Of Silicon By The Method Of Piezoquartz Microweighing With A Sorbing Layer"

Sb. nauch.tr. po probl.mikroelektron. Mosk. in-t elektron.tekhn. (Collection Of Scientific Works On Problems Of Microelectronics. Moscow Institute Of Electronics Technology), 1972, Issue 8, pp 184-192 (from RZh:Elektronika i yeye primeneniye, No 9, Sept 72, Abstract No 9B78)

Translation: The paper considers a statement of the problem of automatization of the control of the composition of a vapor-gas mixture in the chloride process of preparing autoepitaxial layers of Si. Requirements are formulated for methods of control which make it possible to automatize the measurement process. An analysis is made of the possibilities of a method of piezoquartz microweighing with a sorbing layer and the prospects for its use for continuous control of the composition of vapor-gas mixtures are shown. 16 ref. Summary.

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USSR

0 UIC: 621.039.524.034.3

BUSHUYEV, A. V., VORTSOV, V. G., and DUVANOV, V. M.

"Study of a Field of Fast Neutrons in the Shell of a Uranium-Graphite Reactor with a Rhodium Threshold Detector"

Moscow, Atomnaya Energiya, Vol 28, No 5, May 70, p 420

Abstract: This work describes the apparatus and methods used for measurements with a rhodium detector. It is shown that in certain cases the use of cadmium to suppress the background of thermal neutrons leads to errors. The experiments were performed in a graphite pile with nine rods of natural uranium. Experiments were performed in a dry cell and in a cell with 2- and 11-mm water layers around the fuel elements. The method of effective threshold sections was used to determine the effective reaction threshold, 0.72 MeV, and the effective cross section, 0.68 barns, with an uncertainty of about 1%. The 11 mm water film decreases the fast neutron flux by $9.5 \pm 1.5\%$, leaving the distribution in space almost unchanged. The calculated ratio of fast neutron flux to thermal neutron flux with the 11-mm water shield was 8.5% less than the similar ratio for the dry cell.

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1/2 023 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--EXPERIMENTAL STUDY OF THE INFLUENCE EXERTED BY THE DOSAGE OF A
CHEMICAL ON THE INCIDENCE AND INTENSITY OF EXTRINSIC ALLERGY -U-
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ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. A DIRECT RELATION BETWEEN A SENSITIZING DOSAGE AND ALLERGIC EFFECT WAS BROUGHT INTO EVIDENCE FOLLOWING A STUDY OF EXTRINSIC ALLERGY TO 10 OCCUPATIONAL CHEMICAL ALLERGENS IN GUINEA PIGS. AS REGARDS THE MAJORITY OF ASSAY ALLERGENS THIS RELATIONSHIP DID NOT CONCERN THE AREA OF TOXIC DOSES, SINCE POISONING IMPEDES THE DEVELOPMENT OF EXTRINSIC ALLERGY. SOME WEAK ALLERGENS, HOWEVER, CAN PRODUCE AN INTENSIVE SENSITIZATION ALSO WHEN SUPERIMPOSED ON POISONING. A QUESTION IS RAISED AS TO THE PRACTICABILITY OF SETTING UP MAXIMUM PERMISSIBLE STANDARDS FOR CHEMICAL ALLERGENS BY REFERRING TO THEIR SPECIFIC EFFECT. FACILITY:
INSTITUT GIGIYENY TRUDA I PROFZABULEVANNIY AMN SSSR.

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USSR

UDC: 535.321:535.341

DUYSEBAYEVA, Zh., KORSUNSKIY, M. I., MOTULEVICH, G. P.

"Optical Properties of Palladium"

Leningrad, Optika i Spektroskopiya, Vol 34, No 3, Mar 73, pp 535-538

Abstract: The optical constants n and κ ($n - i\kappa$ is the complex index of refraction) of palladium were measured at room temperature in the spectral region from 1 to 9 μm . The specimen was a sheet of electropolished palladium of 99.99% purity measuring 80 x 18 x 3 mm. A layer of about 50 μm was removed by micropolishing to provide a clean surface layer free from work hardening. Ten series of measurements were made. The following characteristics of conduction electrons were calculated from the measured values of n and κ in the region of 4-9 μm : concentration N , effective collision frequency ν , and average velocity on the Fermi surface v_F . The interband luminous conductivity σ_b and interband permittivity ϵ_b were determined from the measured values of n and κ in the region of 1-3.5 μm . A complex conduction band is found which consists of two bands whose parameters are given. The authors thank A. A. Shubin who provided the equipment for measuring optical constants, and I. D. Mash for her assistance with the work.

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USSR

UDC 616.981.42-07:616.15-097.5

CHERNYSHEVA, M. I., and DUYSENOV, K. D., Institute of Epidemiology and Microbiology imeni Gamaleya, Academy of Medical Sciences USSR, and Central Institute of Advanced Training of Physicians

"Characteristics of Incomplete Antibodies in Acute and Chronic Brucellosis Patients"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 12, 1971, pp 97-99

Abstract: Study of the sera of 166 brucellosis patients using Coombs test revealed the presence of incomplete antibodies more often than complete antibodies in the agglutination reaction and in titers almost three times as high, especially in those with acute brucellosis. Sera treated with cysteine contained incomplete antibodies varying in sensitivity to the amino acid. The number of cysteine-resistant incomplete antibodies depended on the severity of the disease. They were detected in patients with a moderately severe and severe course twice as often and in higher titers than in those with a mild course. In chronic cases, cysteine-resistant complete and incomplete antibodies were found chiefly during exacerbations.

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USSR

UDC 616.981.42-07:616.15-097.5-074

CHERNYSHEVA, M. I., KNYAZEVA, E. N., DUYSENOV, K. D., and SHCHERBAK, Yu. F.,
Institute of Epidemiology and Microbiology imeni Gamaleya and Central
Institute for the Advanced Training of Physicians

"Use of the Cysteine Test to Detect 7S(IgG) Antibodies in Acute, Chronic,
and Residual Brucellosis Patients"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 10, 1971,
pp 102-105

Abstract: The indirect hemagglutination test revealed the presence of the
microglobulin 7S(IgG) in the cysteine-treated serums of all 35 patients with
acute or subacute brucellosis and in 64 of 160 patients (40%) with chronic
brucellosis (especially during exacerbation of the disease). The antibody
was not found in those with residual brucellosis. The presence of this
antibody is thus an indicator of the activity and severity of the course
of the infection.

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DUYSENOV S.T.

Hydrometeorology

BASIC STEPS IN THE DEVELOPMENT OF HYDROLOGY AND METEOROLOGY IN KAZAKHSTAN
UDC 551.5:967.084(574) (047)
[Article by head of the Administration of the Hydrometeorological Service of the Kazakh SSR S. T. Dusenov, Doctor of Technical Sciences Yu. P. Vlasov, Honored, Kazakh SSR Scientist, Russian, No 12, 1972, submitted 26 July 1972, pp 94-97]

This article contains a discussion of the growth, development and the modern level of research and operative work of Kazakh meteorologists.

Meteorological research and hydrometeorological science have developed intensely in Kazakhstan since the 1930's with the organization of the hydrometeorological committee and the hydrometeorological institute. The first chairman of the hydrometeorological committee was professor V. V. Kellerman.

At present the administration of the hydrometeorological service of the Kazakh SSR is one of the largest in the USSR, and the Kazakh Scientific Research Institute is the center of hydrometeorological science in Kazakhstan and the head scientific research institute in the union with respect to problems of mud flows and hydrometeorological servicing of animal husbandry.

Since its very beginning, hydrology and meteorology have developed in the Republic in accordance with the problems of hydrometeorological servicing of the national economy of the Republic. The scientific research of that time was mainly of an applied nature.

In 1926-1927, the Main Geophysics Observatory had organized balloon observations in Alma-Ata, Gur'yev, Kyzyl-Ord, and Semipalatinsk. Subsequently, these observations became widespread. In 1936 regular base observations were started in Alma-Ata which were performed for 15 years and permitted a concept of the intensity of atmospheric turbulence and vertical exchange to be obtained. At the end of the same year, the first radiosonde was launched in Alma-Ata by P. A. Holchakov. Radiosonde observations which provided a powerful basis of analysis of atmospheric conditions for the synopticians and meteorologists began to develop broadly in the Kazakhstan network in the second half of the 1930's.

The rapid development of various branches of the national economy and transportation urgently required servicing with synoptic forecasts along with

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USSR

UDC: 624.042.7.001.5

~~DUYSHENALIYEV~~, SH., Frunze

"Experimental Study of Soils in Relation to Seismic Microregioning"

Moscow, Osnovaniya, fundamenty i mekhanika gruntov, No 2, 1971, pp 13-16

Abstract: Results are presented from an experimental study of seismic oscillations at the construction sites of the Papanskoye Water Reservoir during earthquakes. The results show the magnitude of amplitude differences of oscillations in various strata thicknesses and under various soil conditions. The variation of these differences is shown as a function of seismic wave frequency. It is also shown that instrumental resonance curves are in close agreement with the conclusions of the theory of wave propagation in a stratum. The author recommends that the composition and thickness of soils be determined at the sites studied in conducting seismicroregioning which is based on taking into consideration the spectral characteristics of the soil. Original article: two tables, two figures, four formulas, and seven bibliographic entries.

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Immunology

USSR

UDC 619:576.807.7:616.981.42:636.22/.28

DIZHINSKIY, S. I., and KHORT, K. A., Surazh Veterinary Laboratory, Bryznaksys Oblast

"Rapid Diagnosis of Brucellosis"

Moscow, Veterinariya, No 10, 1971, p 116

Abstract: In an article published in Veterinariya, No 3, 1969, P. I. Zverev and L. D. Lyutova described a method for the rapid diagnosis of brucellosis. This method was applied to 1,423 blood samples from cows and found to be highly sensitive and simple to use even with hemolyzed sera. However, it was not very specific and in doubtful cases the complement fixation test was needed for confirmation.

USSR

UDC 539.319

DVERES, M. N. (Moscow)

"A Matrix Method for Calculating Stresses in Nuclear-Reactor Vessels and in Containers"

Moscow, Mashinovedeniye, No 3, May 1973, pp 75-81

Abstract: It is proposed for various designs of reactor vessels, containers under pressure, fittings of complex shape, and other composite structures from elements of shells of revolution, round plates, and rings, for which the conditions for coupling contain unknown discontinuities of movements or forces, that there be used a developed single combination of four matrix relationships of the method of initial parameters, whereby is realized a variant of the method of matrix trial by elimination, and a supplementary matrix formula for determination of the unknown discontinuities. On the basis of these five relationships is compiled a compact ALGOL program, by means of which it is possible to solve, on an electronic digital computer, complex engineering problems of the calculation of a stressed state in the indicated structures at operational force and temperature conditions of work, with account taken of various typical features of these structures in accordance with the developed classification. The time required for such calculations comprises 3-5 minutes on a BESM-4 or an M-220 electronic digital computer. 1 figure, 2 tables. 7 refs.

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